AMENDMENTS TO THE CLAIMS

Claims 1-16 are pending. Please amend Claims 1 and 9.

1. (Currently amended) A method for electrodepositing a conductive material on a workpiece surface having a cavity to form a substantially flat conductive layer, the method comprising:

determining a transition current density at a single level that is capable of filling the cavity with the conductive material and forming a substantially flat profile over an opening of the cavity; and

after determining the transition current density, performing an electrodeposition process on a plurality of workpieces, each electrodeposition process comprising:

applying an initial process current density as the workpieces surface enters the process solution, wherein the initial current density is lower than the transition current density;

applying a first process current density to fill the cavity with the conductive material and form a substantially flat profile over the opening of the cavity, wherein the first process current density is substantially the same as the transition current density; and

applying a second process current density to form a substantially flat conductive layer over the cavity, wherein the second process current density is higher than the transition current density.

2. (Previously presented) The method of claim 1, wherein the first process current density is applied for a first predetermined time and the second process current density is applied for a second predetermined time.

3. (Previously presented) The method of claim 2, further comprising applying a third process current density before applying the first process current density and after applying the initial process current density, wherein the third process current density is higher than the second process current density, and wherein the third process current density is applied for a third predetermined time that is shorter than the first predetermined time.

4. (Previously presented) The method of claim 2, further comprising applying a third process current density after applying the first current density and before applying the second process current density, wherein the third process current density is higher than the second process current density, and wherein the third process current density is applied for a third predetermined time that is shorter than the first predetermined time.

5. (Previously presented) The method of claim 1, further comprising applying a pulsed process current density that is greater than the first process current density, wherein the pulsed process current density comprises one or more individual pulses.

6. (Previously presented) The method of claim 1, further comprising applying a first pulsed process current density that varies between the second process current density and the first process current density, wherein the first pulsed process current density comprises one or more individual pulses.

7. (Previously presented) The method of claim 6, further comprising applying a second pulsed process current density after applying the first pulsed process current density, the second pulsed process current density comprising one or more individual pulses, wherein the second pulsed process current density is greater than the first pulsed process current density.

8. (Previously presented) The method of claim 1, further comprising repeating applying the first process current density and the second process current density.

9. (Currently amended) A method for electrodepositing a conductive material on a workpiece surface, the workpiece surface having a cavity, the method comprising:

determining a transition current density at a single level that is capable of filling the cavity with the conductive material and forming a substantially flat profile over an opening of the cavity; and

after determining the transition current density, performing an electrodeposition process on a plurality of workpieces by depositing the conductive material onto the surface of the workpieces using a variable current density including an initial process current density, a first process current density to fill the cavity and form a substantially flat profile over the opening of the cavity, and a second process current density to form the substantially flat conductive layer over the cavity,

wherein the first process current density is substantially the same as the transition current density, and the second process current density is higher than the transition current density.

10. (Original) The method of claim 9, wherein the first process current density is applied for a first predetermined time and second process current density is applied for a second predetermined time.

11. (Previously presented) The method of claim 10, wherein the first predetermined time is equal to the second predetermined time period.

12. (Previously presented) The method of claim 10, wherein the first predetermined time is longer than the second predetermined time period.

13. (Original) The method of claim 10, wherein the first predetermined time is shorter than the second predetermined time.

14. (Previously presented) The method of claim 2, wherein the first predetermined time is equal to the second predetermined time.

15. (Previously presented) The method of claim 2, wherein the first predetermined time is longer than the second predetermined time.

16. (Previously presented) The method of claim 2, wherein the first predetermined time is shorter than the second predetermined time.